MUNICIPAL STORMWATER MANAGEMENT PLAN

Borough of Ship Bottom

Borough of Ship Bottom Land Use Board
1621 Long Beach Boulevard
Ship Bottom, NJ 08008

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Prepared by:

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INTRODUCTION

The Municipal Stormwater Management Plan (MSWMP) documents the strategy for the Borough of Ship Bottom ("the Borough") to address stormwater-related impacts. The creation of this plan is required by N.J.A.C. 7:14A-25 Municipal Stormwater Regulations. This plan contains all of the required elements described in N.J.A.C. 7:8 Stormwater Management Rules. The plan addresses groundwater recharge, stormwater quantity, and stormwater quality impacts by incorporating stormwater design and performance standards for new major development. Major Development is defined as an individual "development," as well as multiple developments that individually or collectively result in:

1. The disturbance of one or more acres of land since February 2, 2004;
2. The creation of one-quarter acre or more of "regulated impervious surface" since February 2, 2004;
3. The creation of one-quarter acre or more of "regulated motor vehicle surface" since March 2, 2021 {*or the effective date of the Borough 's Stormwater Control Ordinance revised to reflect the new definition for Major Development, whichever is earlier*}; or
4. A combination of 2 and 3 above that totals an area of one-quarter acre or more. The same surface shall not be counted twice when determining if the combination area equals one-quarter acre or more.

Major development includes all developments that are part of a common plan of development or sale (for example, phased residential development) that collectively or individually meet any one or more of items 1, 2, 3, or 4 above. Projects undertaken by any government agency that otherwise meet the definition of "major development" but which do not require approval under the Municipal Land Use Law, N.J.S.A. 40:55D-1 et seq., are also considered "major development."

These standards are intended to minimize the adverse impact of stormwater runoff on water quality and water quantity and the loss of groundwater recharge that provides baseflow in receiving water bodies. The plan describes long-term operation and maintenance measures for existing and future stormwater facilities. The plan has also been update to reflect the need for Major Development to use "Green Infrastructure" (GI) where previously refered to as non-structural strategies within the Stormwater Management Plan. "Green infrastructure" means a stormwater management measure that manages stormwater close to its source by:

1. Treating stormwater runoff through infiltration into subsoil;
2. Treating stormwater runoff through filtration by vegetation or soil; or
3. Storing stormwater runoff for reuse.

The plan addresses the review and update of existing ordinances, the Borough's Master Plan, and other planning documents to allow for project designs that include low impact

development techniques. The final component of this plan is a mitigation strategy for when a variance of the design and performance standards is sought. As part of the mitigation section of the stormwater plan, specific stormwater management measures are identified to lessen the impact of existing development.

STORMWATER DISCUSSION

Land development can dramatically alter the hydrologic cycle (see Figure 1) of a site and, ultimately, an entire watershed. Prior to development, native vegetation can either directly intercept precipitation or draw that portion that has infiltrated into the ground and return it to the atmosphere through evapotranspiration. Development can remove this beneficial vegetation and replace it with lawn or impervious cover, reducing the site's evapotranspiration and infiltration rates. Clearing and grading a site can remove depressions that store rainfall. Construction activities may also compact the soil and diminish its infiltration ability, resulting in increased volumes and rates of stormwater runoff from the site. Impervious areas that are connected to each other through gutters, channels, and storm sewers can transport runoff more quickly than natural areas. This shortening of the transport or travel time quickens the rainfall-runoff response of the drainage area, causing flow in downstream waterways to peak faster and higher than natural conditions. These increases can create new and aggravate existing downstream flooding and erosion problems and increase the quantity of sediment in the channel. Filtration of runoff and removal of pollutants by surface and channel vegetation is eliminated by storm sewers that discharge runoff directly into a stream. Increases in impervious area can also decrease opportunities for infiltration which, in turn, reduces stream base flow and groundwater recharge. Reduced base flows and increased peak flows produce greater fluctuations between normal and storm flow rates, which can increase channel erosion. Reduced base flows can also negatively impact the hydrology of adjacent wetlands and the health of biological communities that depend on base flows. Finally, erosion and sedimentation can destroy habitat which some species cannot adapt.

In addition to increases in runoff peaks, volumes, and loss of groundwater recharge (see Figure 2), land development often results in the accumulation of pollutants on the land surface that runoff can mobilize and transport to streams. New impervious surfaces and cleared areas created by development can accumulate a variety of pollutants from the atmosphere, fertilizers, animal wastes, and leakage and wear from vehicles. Pollutants can include metals, suspended soils, hydrocarbons, pathogens and nutrients.

In addition to increased pollutant loading, land development can adversely affect water quality and stream biota in more subtle ways. For example, stormwater falling on impervious surfaces or stored in detention or retention basins can become heated and

raise the temperature of the downstream waterway, adversely affecting cold water fish species such as trout. Development can remove trees along stream banks that normally provide shading, stabilization, and leaf litter that falls into streams and becomes food for the aquatic community.

BACKGROUND

The Borough of Ship Bottom encompasses a total area of 0.99 square miles, with 0.71 square miles being land area, and 0.28 square miles comprised of water area, and is located within Ocean County, New Jersey. The most recent census data indicates that the population has slightly decreased from 1384 in 2000 to 1156 in 2010, a decrease of 228, or 16.5%. The 2010 census also indicates that 555 housing units are located within the Borough. The Borough of Ship Bottom is a resort community, with population surges during the summer months.

Borough of Ship Bottom represents a portion of the barrier island known as Long Beach Island. The Borough is located on the central portion of the island. The Borough is bordered by the Barnegat Bay to the west, the Atlantic Ocean on the east, Long Beach Township to the south and the Borough of Surf City to the north. Figure 3 depict the Borough boundaries on USGS quadrangle maps. Figure 4 provides aerial views of the Borough from 2015 Orthophotography.

Since the Borough of Ship Bottom is an barrier island town with water on both sides of it's coasts, it is influenced by tidal patterns. The existing stormwater infrastructure is capable of handling design storm events during low tide. However, during a rain storm within high tide, the stormwater piping and inlet system becomes flooded.

No major changes in development patterns or population have occurred within the Borough in many years. Occasional tidal flooding is expected within this type of community. With the exception of stormwater pumps for tidal flooding events it is not necessary to make any changes to the existing system.

Figure 5 provide wellhead protection areas, which are required as part of the MSWMP.

GOALS

The goals of this MSWMP are to:

1. **Reduce Flood Damage To Life And Property**

   Policies:

   a. Maintain surface drainage to reduce the threat of flooding, through proper maintenance of the stormwater drainage system infrastructure, with practices that are protective of water quality.

   b. Preserve open stormwater drainage infrastructure where feasible, to best accommodate peak storm flows, maintain flood storage capacity, and promote water quality.

   c. Adhere to standards, policies, and practices which comply with Federal Emergency Management Agency (FEMA) Flood Management Program requirements to insure that the Borough maintain flood insurance coverage under this program.

   Implementation Actions:

   a. Continue evaluation of maintenance practices and implement appropriate BMPs to assure that the Borough adequately maintains the stormwater drainage system capacity in an environmentally responsible manner.

   b. Evaluate and refine programs including educational outreach, inspection, and enforcement components to reduce the negative stormwater impacts from land alteration, erosion, sedimentation, and excessive runoff.

   c. Review and amend the Municipal Code as needed to comply with FEMA requirements for floodplain development.

2. **Minimize, To The Extent Practical, Any Increase In Stormwater Runoff From Any Development**

   Policies:

   a. Through the development review process, the Borough will ensure that development is protective of significant open waterways, wetlands, and riparian areas.

   b. The Borough shall ensure that all development does not exceed maximum impervious coverages permitted in the ordinance to control stormwater runoff.

Implementation Actions:

a. The Borough will review development proposals for impacts on open drainageways, wetlands, and riparian areas, and protect the functions and benefits of these areas as provided for in the Development Code and Engineering Design Standards and Procedures Manual.

b. The Borough will work cooperatively with citizens, businesses, and agencies to protect and improve surface waterways, seek opportunities for stewardship partnerships, further enhance educational opportunities, and continue participation in intergovernmental work groups

3. Reduce Soil Erosion From Any Development Or Construction Project

Policies:

a. The Borough will implement permitting programs, educational outreach, compliance inspections and enforcement activities as needed to reduce erosion, sedimentation, illicit discharges and other pollution impacts to waterways.

Implementation Actions:

a. Enhance erosion and illicit discharge detection and compliance efforts, including permitting and Code enforcement.

4. Assure The Adequacy Of Existing And Proposed Culverts And Bridges, And Other Instream Structures

Policies:

a. The Borough will seek funding and partnership opportunities for restoration efforts.

b. The Borough will implement inspection procedures to ensure structures are operating as designed.

Implementation Actions:

a. Provide adequate funding for public maintenance of the stormwater drainage system, and ensure ongoing maintenance of private stormwater features through development agreements.

b. Provide operation and maintenance manual which will outline preventative and corrective measures.

5. Prevent, To The Greatest Extent Feasible, An Increase In Nonpoint Pollution

Policies:

a. The Borough will educate the general public and provide technical assistance to businesses, industries, and agencies regarding practices and obligations for keeping pollutants out of the stormwater drainage system.

b. The Borough will enforce Codes prohibiting the discharge of any deleterious material to the stormwater drainage system.

c. The Borough will continue to maintain cooperative partnerships with local water providers to address local stormwater quality issues.

d. The Borough will seek to form partnerships with neighborhoods or groups interested in providing stewardship of local waterways.

e. The Borough will develop, implement, and enforce appropriate building, design, and Municipal codes to address water quality compliance issues, including pollution, habitat, and aesthetic issues, to encourage the development of urban waterways that are positive amenities in the community.

Implementation Actions:

a. The Borough will review development proposals for impacts on open drainageways, wetlands, and riparian areas, and protect the functions and benefits of these areas as provided for in the Development Code and Engineering Design Standards and Procedures Manual.

b. The Borough will work cooperatively with citizens, businesses, and agencies to protect and improve surface waterways, seek opportunities for stewardship partnerships, further enhance educational opportunities, and continue participation in intergovernmental work groups.

c. The Borough will implement and continue to refine/improve BMPs for all Borough activities with potential to impact water quality and/or the functions of waterways, wetlands, and riparian areas.

d. The Borough will continue to support outreach and education efforts regarding water quality, riparian and wetland areas, including business, contractor, and developer outreach programs to educate these parties about their impacts on stormwater quality.

e. Continue to maintain enforcement and compliance activities, including inspections, technical assistance, and Code enforcement.

6. **Maintain The Integrity Of Waterways For Their Biological Functions, As Well As For Drainage**

Policies:

a. The Borough will maintain its open channels and waterways in a manner that is protective of their natural stormwater management and habitat functions for the benefit of the citizens of the Borough, local wildlife, including threatened or endangered species, and future generations.

b. The Borough will, through the Development Code and Engineering Design Standards and Procedures Manual, protect existing significant open waterways and encourage site planning and landscaping that enhances the attractiveness and natural functions of the water features.

7. **Minimize Pollutants In Stormwater Runoff From New And Existing Development To Restore, Enhance, And Maintain The Chemical, Physical And Biological Integrity Of The Waters Of The State, To Protect Public Health, To Safeguard Fish And Aquatic Life And Scenic And Ecological Values, And To Enhance The Domestic, Municipal, Recreational, Industrial, And Other Uses Of Water**

Policies:

a. The Borough will develop targeted education and outreach and technical assistance programs regarding practices and obligations for keeping debris and pollutants out of the stormwater drainage system and train stakeholder groups in appropriate erosion control and sediment prevention practices, as well as stormwater management BMPs.

b. The Borough will develop, implement, and enforce appropriate building, design, and Municipal Codes to address water quality compliance issues, including pollution, habitat, and aesthetic issues, to encourage the development of urban waterways that are positive amenities in the community.

Implementation Actions:

a. Increase educational outreach to schools to increase awareness of children regarding the need to keep litter and pollutants out of urban drainageways.

b. Continue to maintain enforcement and compliance activities, including inspections, technical assistance, and Code enforcement.

c. The Borough will review development proposals for impacts on open drainageways, wetlands, and riparian areas, and protect the functions and benefits of these areas as provided for in the Development Code and Engineering Design Standards and Procedures Manual.

d. The Borough will work cooperatively with citizens, businesses, and agencies to protect and improve surface waterways, seek opportunities for stewardship partnerships, further enhance educational opportunities, and continue participation in intergovernmental work groups.

e. The Borough will implement and continue to refine/improve BMPs for all Borough activities with potential to impact water quality and/or the functions of waterways, wetlands, and riparian areas.

f. Continue to support spill response training for Borough staff, including training and coordination with other jurisdictions for area or regional major event response.

g. Consider support for limiting extremely hazardous chemical use in wellhead protection zones.

h. Support public hazardous waste disposal events.

8. Maintain Groundwater Recharge

Policies:

a. The Borough shall ensure compliance with the Stormwater Control Ordinance and NJDEP's N.J.A.C. 7:8 regulations requiring developments to meet the groundwater recharge requirements.

Implementation Actions:

a. The Borough shall review development applications classified as "Major Development" to ensure compliance with groundwater recharge requirement requiring applicants to demonstrate through hydrologic and hydraulic analysis that the site and its stormwater management measures maintain 100 percent of the average annual pre-construction groundwater recharge volume for the site or demonstrate through hydrologic and hydraulic analysis that the increase of stormwater volume from predevelopment to post construction for the two year storm event is infiltrated

9. **To Protect Public Safety Through Proper Design And Operation Of Stormwater Management Basins**

Policies:

a. The Borough shall ensure compliance to protect the public safety through the proper design and operations of Stormwater Management Basins.

Implementation Actions:

a. The Borough will review stormwater management designs which include basins for compliance with Chapter 9.4 Extended Detention Basins and Chapter 9.5 Infiltration Basins within the NJDEP Best Practices Manual.

b. The Borough will ensure that municipal inspectors observe the construction and ongoing operation of the stormwater management basins for public safety.

TOTAL MAXIMUM DAILY LOADS (TMDLs)

A Total Maximum Daily Load (TMDL) is the amount of a pollutant that can be accepted by a waterbody without causing an exceedance of water quality standards or interfering with the ability to use a waterbody for one or more of its designated uses. The allowable load is allocated to the various sources of the pollutant, such as stormwater and wastewater discharges, which require an NJPDES permit to discharge, and nonpoint source, which includes stormwater runoff from agricultural areas and residential areas, along with a margin of safety. Provisions may also be made for future sources in the form of reserve capacity. An implementation plan is developed to identify how the various sources will be reduced to the designated allocations. Implementation

strategies may include improved stormwater treatment plants, adoption of ordinances, reforestation of stream corridors, retrofitting stormwater systems, and other BMPs.

The New Jersey Department of Environmental Protection (NJDEP) has established an Ambient Biomonitoring Network (AMNET) to document the health of the state's waterways. There are over 800 AMNET sites throughout the state of New Jersey. These sites are sampled for benthic macroinvertebrates by NJDEP on a five-year cycle. Streams are classified as non-impaired, moderately impaired, or severely impaired based on the AMNET data. The data is used to generate a New Jersey Impairment Score (NJIS), which is based on a number of biometrics related to benthic macroinvertebrate community dynamics.

The New Jersey Integrated Water Quality Monitoring and Assessment Report (305(b) and 303(d)) (Integrated List) is required by the Federal Clean Water Act to be prepared biennially and is a valuable source of water quality information. This combined report presents the extent to which New Jersey waters are attaining water quality standards, and identifies waters that are impaired. Sublist 5 of the Integrated List constitutes the list of waters impaired or threatened by pollutants, for which one or more TMDLs are needed.
For Borough of Ship Bottom, there are multiple water bodies along it's coasts (see Figure 6). The Atlantic Ocean is to the east and to the west is the Barnegat Bay/Manahawkin Bay. These waterways are contained in Watershed Management Area 13, Atlantic Coastal Water Region. TMDL's for this region were established and approved in September 2006 and are scheduled for adoption. No TMDL and/or reduction have been designated for Streams or Lakes. Applicable Shellfish TMDL impairment and any reductions for the remaining three waterways are described as follows:

<u>Municipality and County</u>
Borough of Ship Bottom
Ocean County

<u>Total Maximum Daily Load(TMDL) Information for Selected Municipality</u>:
Applicable Stream TMDL(s) - None

Applicable Lake TMDL(s) - None

Applicable Shellfish TMDL(s) - Fourteen Total Maximum Daily Loads for Total Coliform to Address Shellfish-Impaired Waters in Watershed Management Area 13

Total coliform - 2006 : Manahawkin Bay-A : No Reduction Required

The Plan will help to reduce the loads by encouraging less impervious area, more native vegetation (less fertilizers), less pollution in the conveyance system, and overall less disturbance than was previously permitted. Reduction of pollution in the conveyance system will be enacted by requiring debris deterring devices on all new inlets and by retrofitting existing inlets with such devices. Borough inlet inspection and cleanout procedures will also reduce the amount of pollution due to regularly occurring overflow or flooding. In addition, effective enforcement of sediment and erosion control regulations will be beneficial to prevent additional sediment inputs from construction activity.

The Borough does not have any outfalls to the Ocean so there is limited impact from the Borough. However, sources of the minimal impacts could be caused by direct runoff from developed areas or by tidally influenced flooding of the conveyance system and roadways, and the subsequent draining down of the systems after the storm event, at low tide, and the pollutants that are carried to the ocean.

DESIGN AND PERFORMANCE STANDARDS

The Borough has adopted the design and performance standards for stormwater management measures as presented in N.J.A.C. 7:8-5 to minimize the adverse impact of stormwater runoff on water quality and water quantity and loss of groundwater recharge in receiving water bodies. The design and performance standards include the language for maintenance of stormwater management measures consistent with the stormwater management rules at N.J.A.C. 7:8-5.8 Maintenance Requirements, and language for safety standards consistent with N.J.A.C. 7:8-6 Safety Standards for Stormwater Management Basins.

The minimum design and performance standards for erosion control are those established under the Soil Erosion and Sediment Control Act, N.J.S.A.4:24-39 et seq., and implemented rules at N.J.A.C. 2:90 and 16:25A.

The minimum design and performance standards for groundwater recharge, stormwater runoff quality and stormwater runoff quantity at N.J.A.C. 7:8-5.4, 5.5 and 5.6 shall be met by incorporating green infrastructure in accordance with N.J.A.C. 7:8-5.3.

The general standards for stormwater management measures are specified in N.J.A.C. 7:8 Stormwater Management Rules and have been incorporated into the Borough's Ordinance. These measures shall be incorporated as needed to meet the soil erosion standards included in the Borough's Stormwater Control Ordinance. The design standards for the specific structural and green infrastructure stormwater management measures are those included in the New Jersey Stormwater Best Management

Practices Manual (BMP Manual). Alternate designs or practices may be used if they are approved by the Borough and comply with N.J.A.C.7:8-4.6. The design and construction of such facilities must comply with the Soil Erosion and Sediment Control Standards as well as any other applicable state regulation, including the Freshwater Wetland Protection Act rules, the Flood Hazard control rules, the Surface Water Quality Standards, the Coastal Area Facilities Review Act, Waterfront Development and Harbor Facilities Act, and the Dam Safety rules. The requirement to be consistent with all other applicable rules will be included in the Borough's Stormwater Control Ordinance. Stormwater runoff quality controls for total suspended solids and nutrient loads shall meet the design and performance standards as specified in the Stormwater Management rules.

During construction, Borough Inspectors will observe the construction of the project to ensure that the stormwater management measures are constructed and function as designed. Should it be determined that stormwater management measures are not being constructed, maintained or operating as designed, after construction, enforcement will be required. The Borough will reserve the right to implement a fine schedule in the event of repeated non-compliance warnings being issued, with all monies being utilized to address the standard being violated.

Where the Borough assumes maintenance responsibility, preventive maintenance shall be performed on a regular basis and will be appropriate for the particular structural management measure being implemented. These maintenance measures shall be in accordance with N.J.A.C. 7:8-5.8 and may include: periodic inspections, vegetation management, sediment, debris and trash removal and mosquito control. Corrective maintenance shall be performed on an as needed basis for structural repairs or replacements, removal of outlet and pipe blockages, erosion restoration, snow and ice removal, etc. The person or persons responsible for maintenance shall keep a detailed log of all preventative and corrective maintenance for the structural management measures incorporated into the design of the development, including a record of all inspections and work orders.

In order to ensure adequate long term operation as well as preventative and corrective maintenance of both structural and green infrastructure stormwater management facilities, the designers of such facilities should submit to the Borough a maintenance plan indicating specific maintenance tasks and schedules as indicated in N.J.A.C. 7:8-5.8 "Maintenance Requirements". This maintenance plan will require the ultimate user of said BMP's to provide an annual certification that the stormwater management measure approved are functioning as designed and that the proper maintenance and inspection of said measures have been performed. Random spot inspections by the Borough will be conducted to ensure compliance along with appropriate enforcement actions such as fines to be levied should non-compliance result.

PLAN CONSISTENCY

The Borough is not within a Regional Stormwater Management Planning Area. TMDLs have been identified for waters within the Borough with reduction percentages indicated. If any RSWMPs or TMDLs are developed in the future, this Municipal Stormwater Management Plan will be updated to be consistent.
The Municipal Stormwater Management Plan is consistent with the Residential Site Improvement Standards (RSIS) at N.J.A.C. 5:21.
The Borough will utilize the most current update of the RSIS in the stormwater management review of residential areas. This Municipal Stormwater Management Plan will be updated to be consistent with any future updates to the RSIS.

The Borough's Stormwater Control Ordinance requires all new development and redevelopment plans to comply with New Jersey's Soil Erosion and Sediment Control Standards. During construction, Borough Inspectors will observe on-site soil erosion and sediment control measures and report any inconsistencies to the local Conservation office.

NONSTRUCTURAL STORMWATER MANAGEMENT STRATEGIES AND GREEN INFRASTRUTURE

The Borough has reviewed the Master Plan and Ordinances, and has provided a list of the sections in the Borough Land Use and Zoning Ordinances that incorporate nonstructural stormwater management strategies and Green Infrastructure. Some of these ordinances have been identified for revision. Once the ordinance texts are completed, they will be submitted to the County review agency for review and approval. A copy will be sent to the Department of Environmental Protection at the time of submission.

Maps and/or figures referenced herein and within the Master Plan and Land Use Ordinances have been prepared to educate the public of the various environmental features that make up the Borough. These maps depict features such as groundwater recharge areas, flood zones, topography, HUC 14 areas and water bodies.

The following ordinances have been identified,

Title 8 "Health and Safety", Chapter 8.40 "Pet Waste": This chapter provides regulations for proper disposal of "Pet Waste" as necessary to reduce the negative effects of nutrient loading on adjacent waterways and the Atlantic Ocean.

Title 8 "Health and Safety", Chapter 8.44 "Wildlife Feeding": This chapter provides regulations which prohibit "Wildlife Feeding" in any public park or on any other property owned or operated by the Borough as necessary to reduce the negative effects of nutrient loading on adjacent waterways and the Atlantic Ocean.

Title 8 "Health and Safety", Chapter 8.12 "Litter Control": This chapter provides regulations on "Litter Control" and provides direction on storage and disposal of refuse within the Borough to protect public health, safety, and welfare. Also see Chapter 3 "Police Regulations" Section 3-1 "Litter"

Title 8 "Health and Safety", Chapter 8.52 "Containerized Yard Waste/Yard Waste Collection Program": This chapter provides regulations for "Containerized Yard Waste/Yard Waste Collection Program" which establishes requirements for proper handling of yard waste and methods for pickup and disposal for waste materials including hazardous waste, recyclable materials, and for commercial establishments.

"Title 8 "Health and Safety", Chapter 8.48 "Improper Disposal of Waste": This chapter provides regulation for "Improper Disposal of Waste" which prohibits spilling, dumping, or disposal of materials other than stormwater to the Municipal Separate Storm Sewer System (MS4).

Title 8 "Health and Safety", Chapter 8.64 "Private Storm Drain Inlet Retrofitting": This chapter provides regulations requiring the retrofitting of existing storm drain inlets on private property to prevent the discharge of solids and floatables to the Municipal Separate Storm Sewer System (MS4).

Chapter 16.92 "Stormwater Control": This chapter provides regulation for "Stormwater Control" as described in the NJDEP model ordinance which includes requirements for green infrastructure.

"Title 8 "Health and Safety", Chapter 8.48 "Improper Disposal of Waste" Section 8.48.020 "Definitions": This chapter provides regulation for "Illicit Connections" as described in the NJDEP model ordinance which prohibits illicit connections to the Municipal Separate Storm Sewer System (MS4).

"Title 8 "Health and Safety", Chapter 8.56 "Refuse Container/Dumpster": This chapter provides regulation for "Refuse Container / Dumpster" as described in the NJDEP model ordinance which requires dumpster and refuse containers located outdoors to be covered at all times to prohibit spilling, dumping, or disposal of materials other than stormwater to the Municipal Separate Storm Sewer System (MS4)

LAND USE/BUILD-OUT ANALYSIS

Since the Borough of Ship Bottom contains 0.71 square miles of land area, we are not required to prepare a Land Use/Build-Out Analysis. As shown on Figure 7, Land Use Maps, the existing impervious coverage does not leave more than one square mile of vacant or agricultural lands, and this analysis is only required of municipalities with more than one square mile of vacant or agricultural lands. Figures 8 illustrates the HUC 14 (Hydrologic Unit Code) Watershed Areas within the Borough.

MITIGATION PROJECT CRITERIA

Mitigation is defined as an action by an applicant providing compensation or offset actions for onsite stormwater management requirements where the applicant has demonstrated the inability or impracticality of strict compliance with the stormwater management requirements set forth in NJAC 7:8, in an adopted regional stormwater management plan, or in this local ordinance, and has received a waiver from strict compliance from the municipality. Mitigation, for the purposes of this ordinance, includes both the mitigation plan detailing how the project's failure to strictly comply will be compensated, and the implementation of the approved mitigation plan within the same HUC-14 within which the subject project is proposed.

The mitigation project should be implemented in the same drainage area as the proposed development, preferably on the same site. The project must provide additional groundwater recharge benefits, or protection from stormwater runoff quality and quantity from previously developed property that does not currently meet the design and performance standards outlined in the Municipal Stormwater Management Plan. The developer must ensure the long-term maintenance of the project, including the maintenance requirements under Chapters 8 of the NJDEP Stormwater BMP Manual.

If a suitable site cannot be located on the site or in the same drainage area as the proposed development after extensive research, as discussed above, the mitigation project may provide mitigation that is not equivalent to the impacts for which the variance or exemption is sought, but that addresses the same issue. For example, if a variance is given because the 80 percent TSS requirement is not met, the selected project may address water quality impacts due to a fecal impairment.

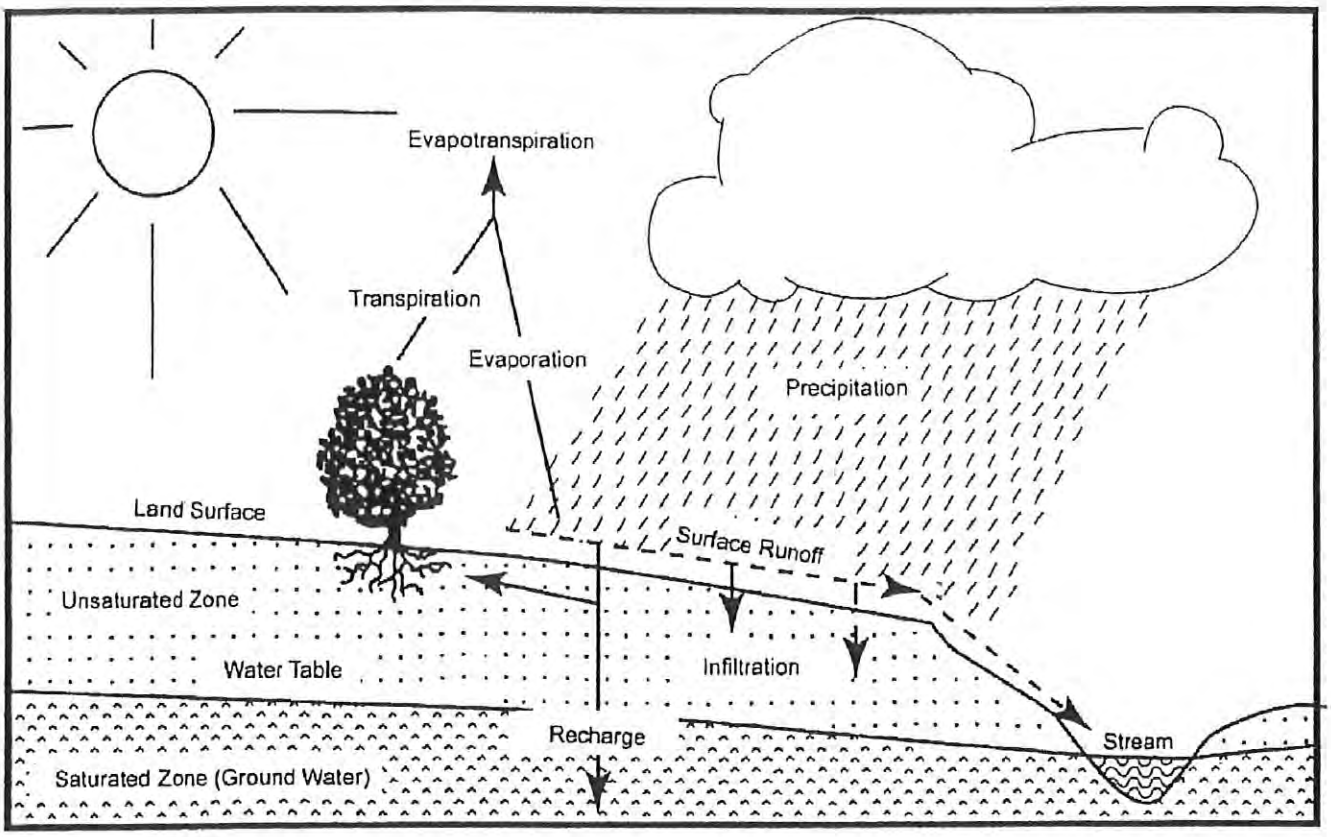
A mitigation option is provided below, but this shall not be considered all-inclusive. If a developer can provide any different options for mitigation, they shall be presented to the Borough Engineer for his approval.

- Install a manufactured treatment device approved by the State for removal TSS rates to provide water quality at the Borough's outfalls. Units installed shall be approved by the NJDEP and a maintenance schedule shall be provided.

The issuance of a waiver under a Land Use Permit by the NJDEP does not automatically waive the requirement for mitigation to be performed under the municipal review. It shall also be noted that the applicant is required to obtain all the required permits for any mitigation project which will be performed under the municipal review.

When submitting for a CAFRA permit and requesting a waiver from the performance standards, the NJDEP can require a mitigation plan regardless of the Borough's decision to require one.

Figure 1: Groundwater Recharge in the Hydrologic Cycle



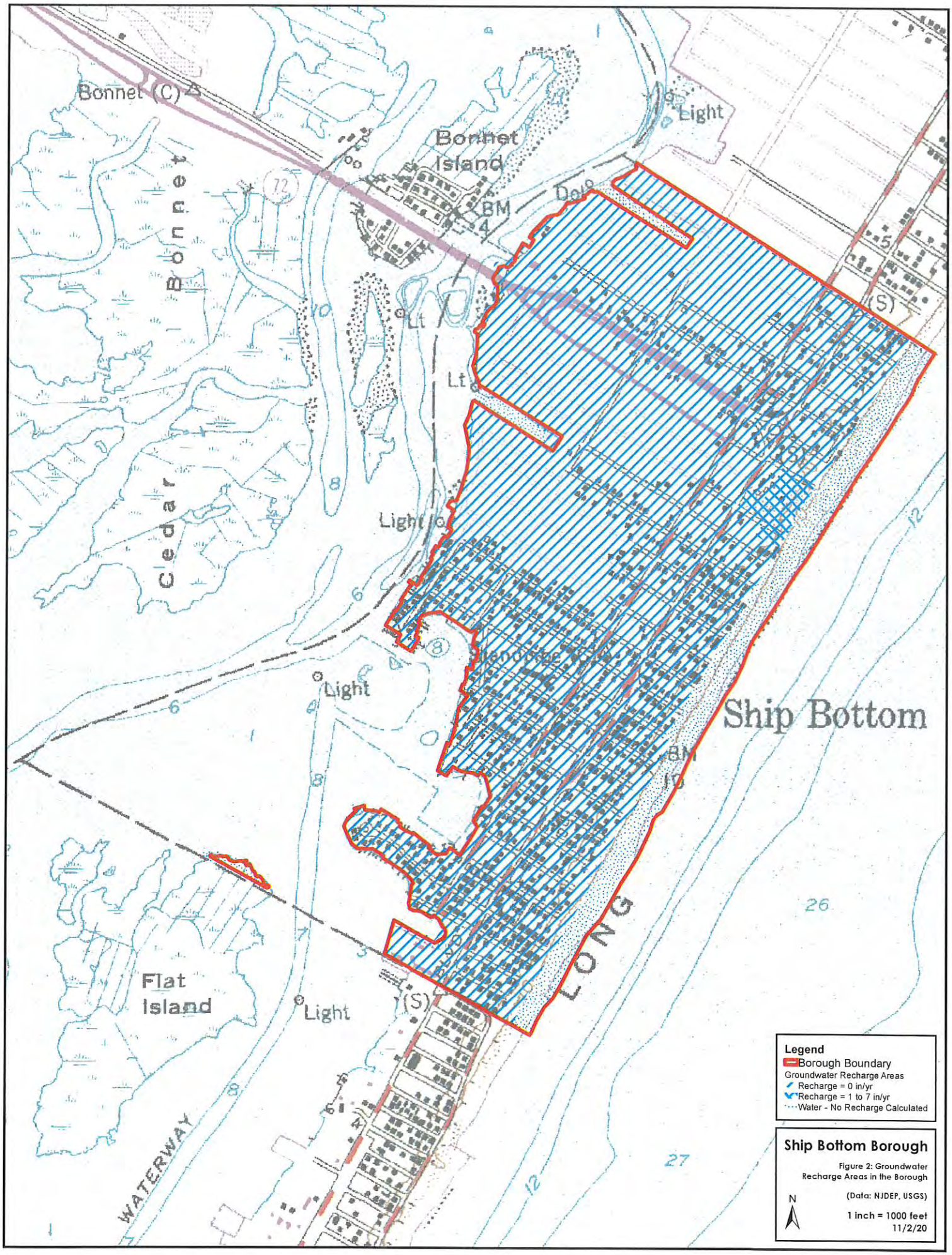
Source: New Jersey Geological Survey Report GSR-32.

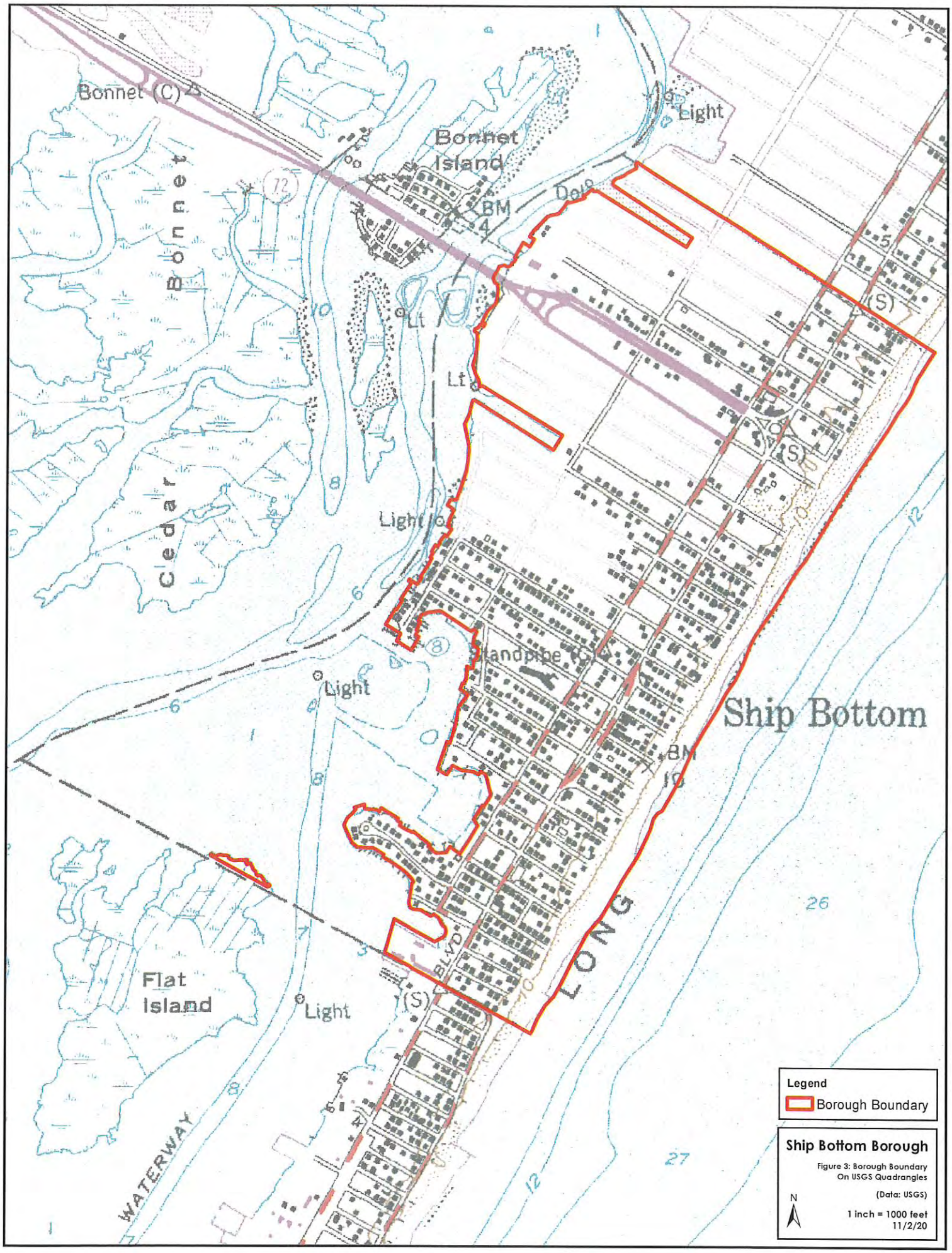
Ship Bottom Borough

Figure 1: Groundwater Recharge In The Hydrologic Cycle

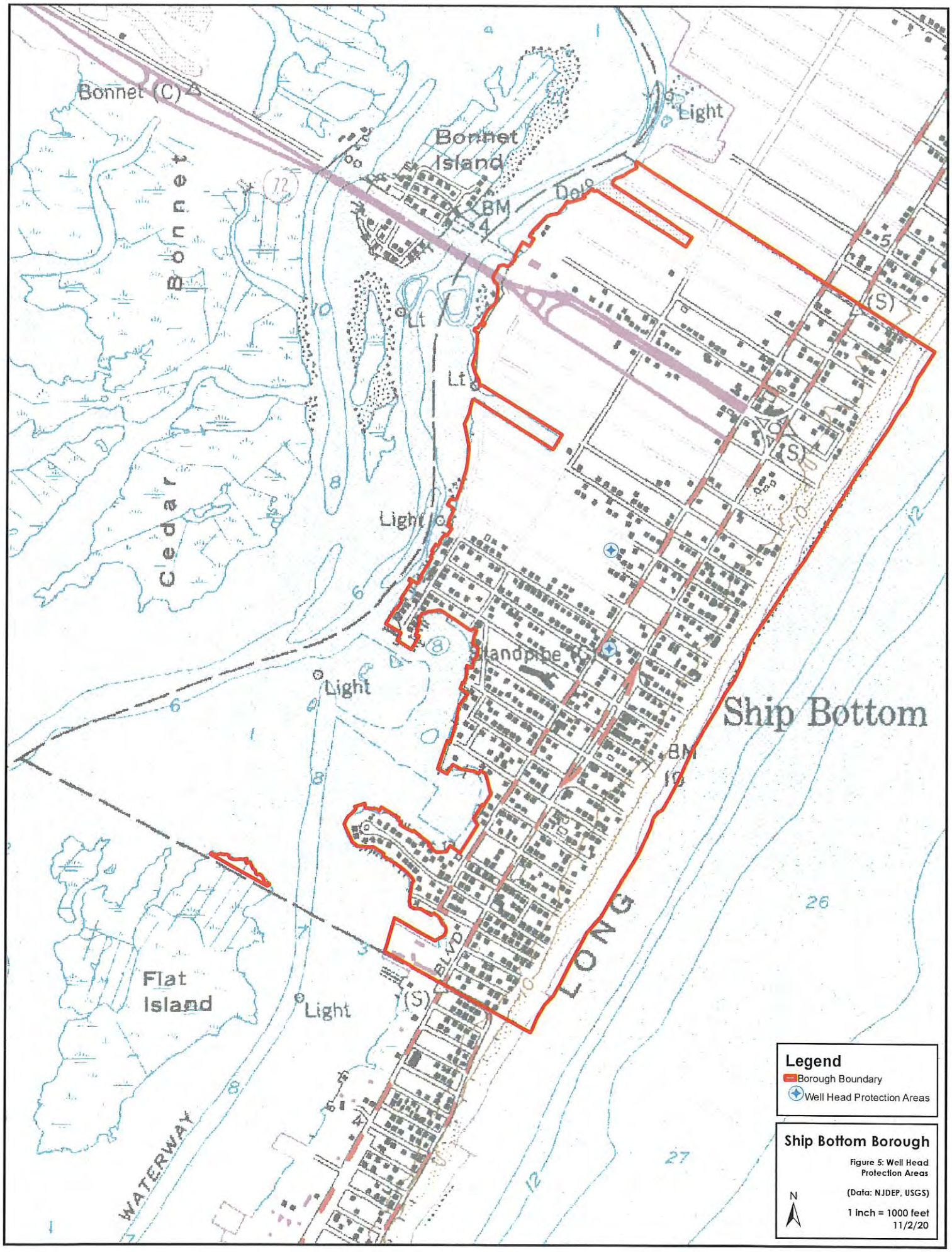
(Data: NJ Geological Survey Report GSR-32)

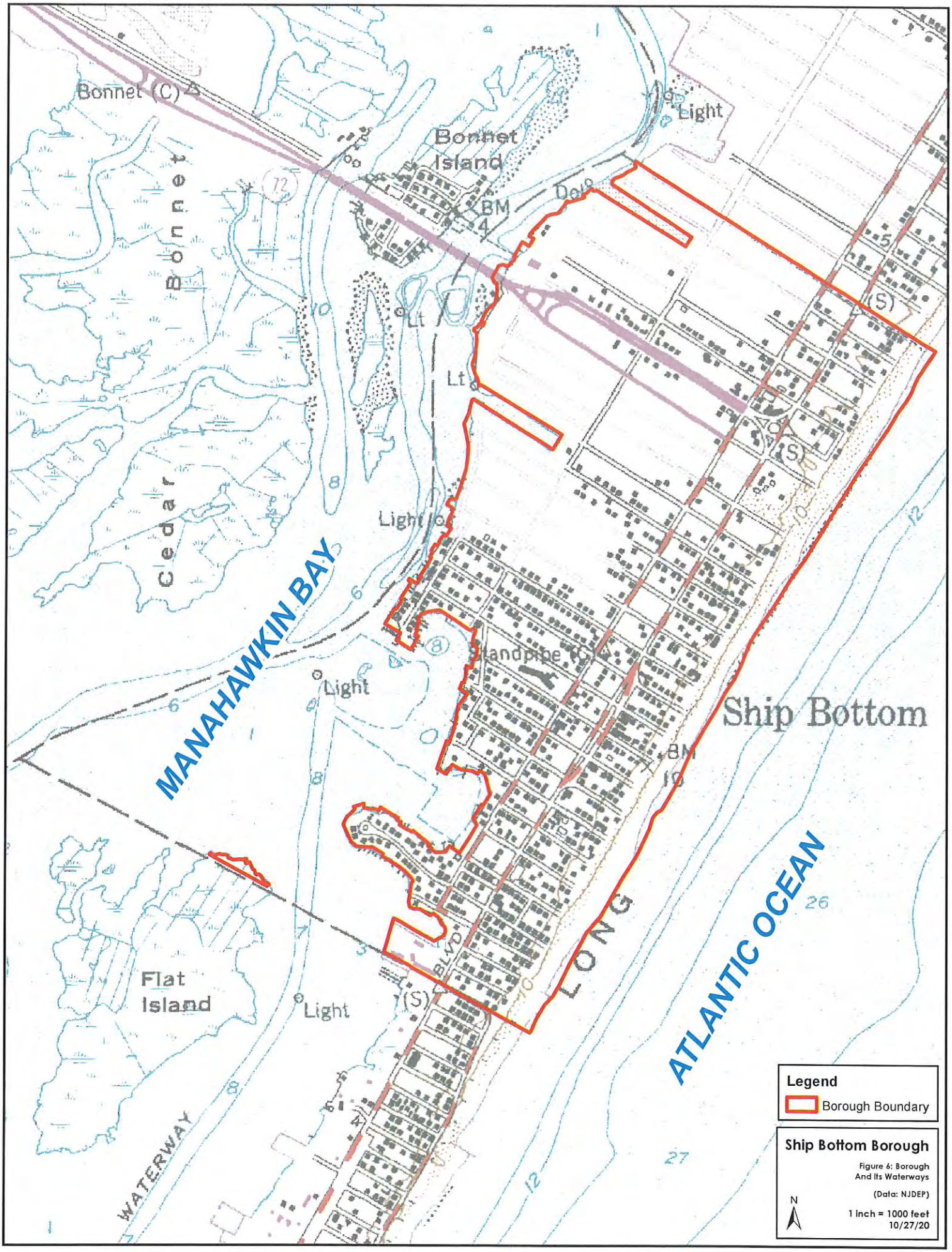
11/2/20

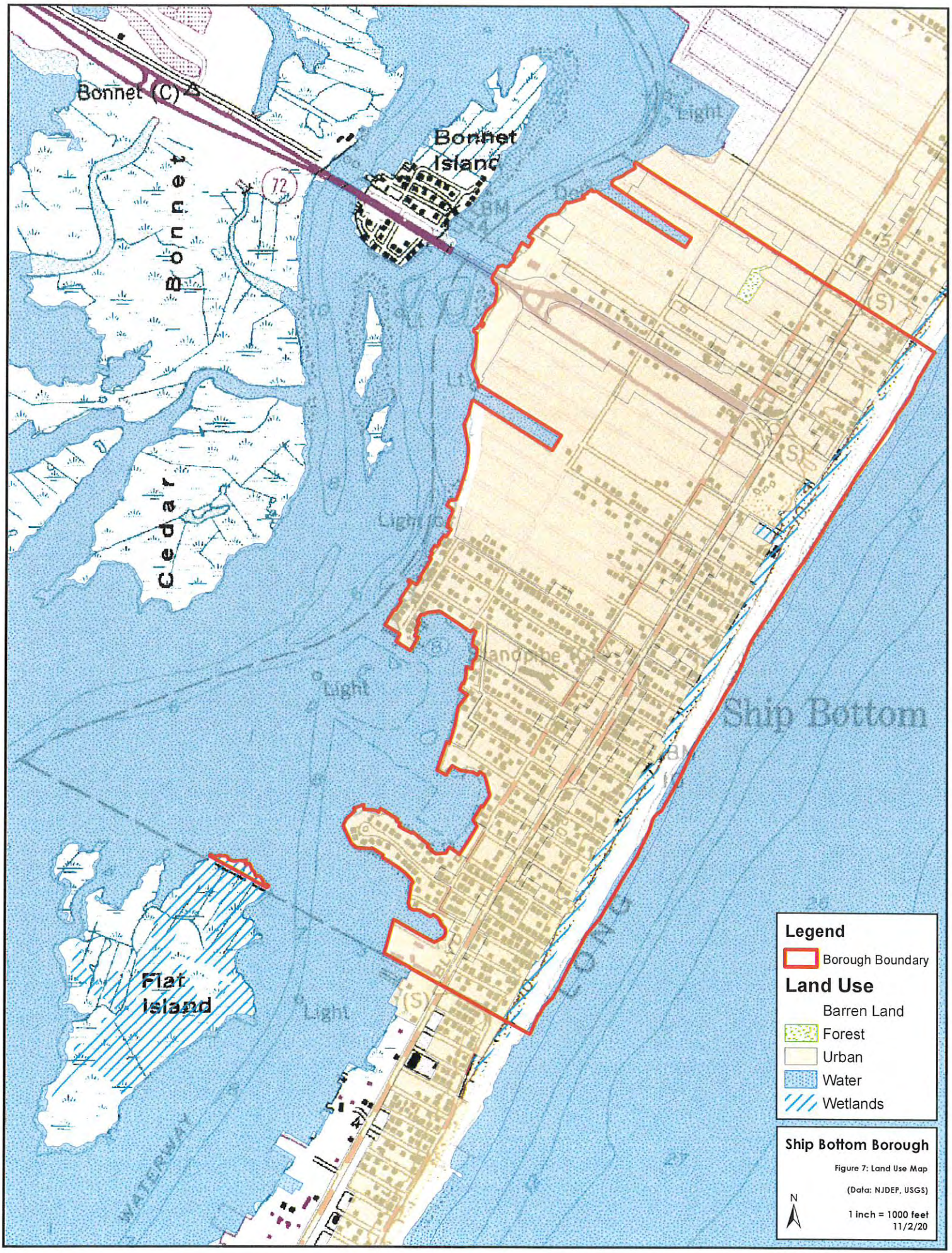

Bonnet (C)
Bonnet Island
Light
Cedar Bonnet
Lt
Light
Light
Ship Bottom
Flat Island
Light
LONG
WATERWAY
Legend
Borough Boundary
Groundwater Recharge Areas
Recharge = 0 in/yr
Recharge = 1 to 7 in/yr
Water - No Recharge Calculated
Ship Bottom Borough
Figure 2: Groundwater Recharge Areas in the Borough
(Data: NJDEP, USGS)
N
1 inch = 1000 feet
11/2/20

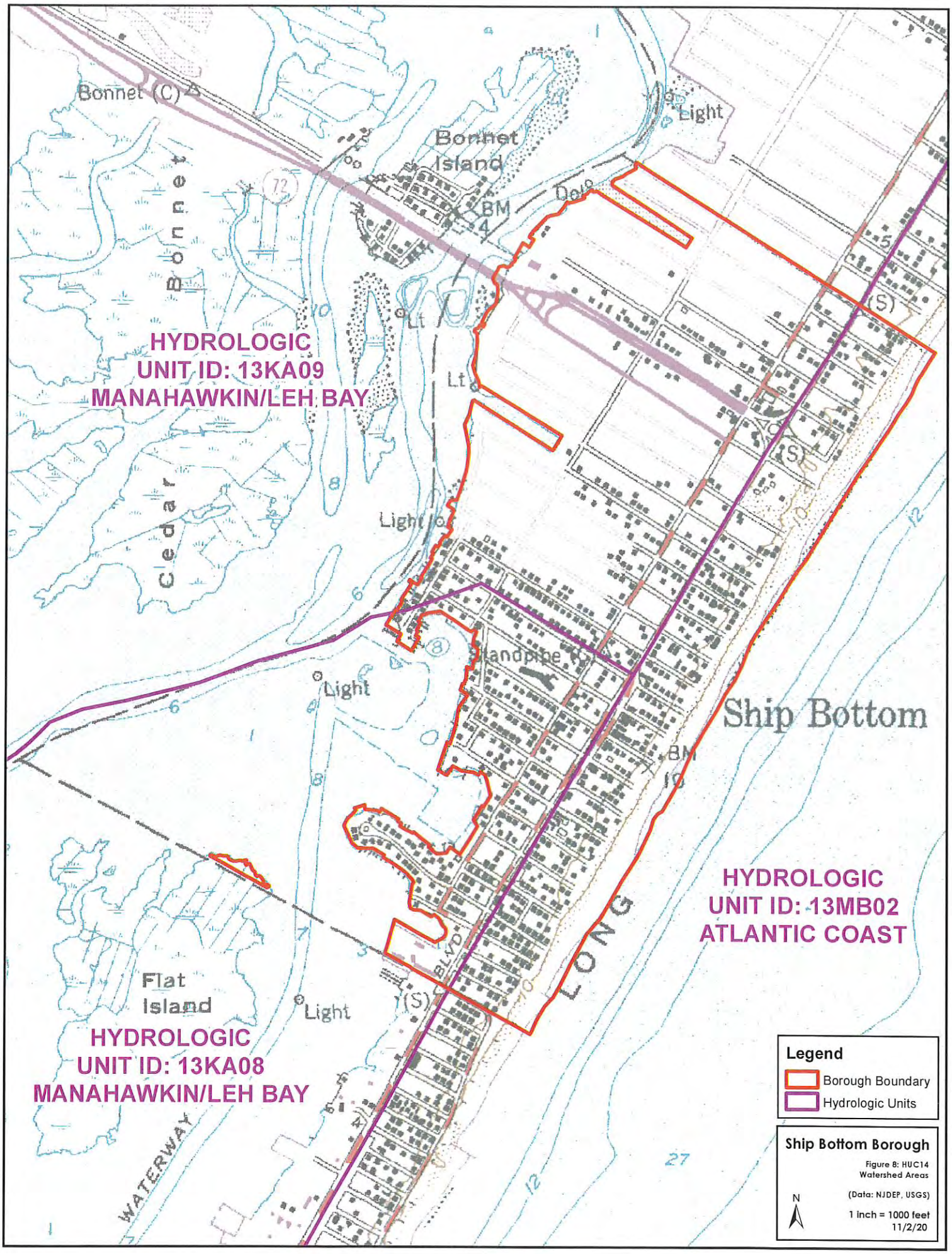

Bonnet (C)
Bonnet Island
Light
Bonnet
Cedar
Lt
Light
Standpipe
Light
Ship Bottom
Flat Island
Light
LONG
BLVD
WATERWAY
Legend
Borough Boundary
Ship Bottom Borough
Figure 3: Borough Boundary On USGS Quadrangles
(Data: USGS)
N
1 inch = 1000 feet
11/2/20

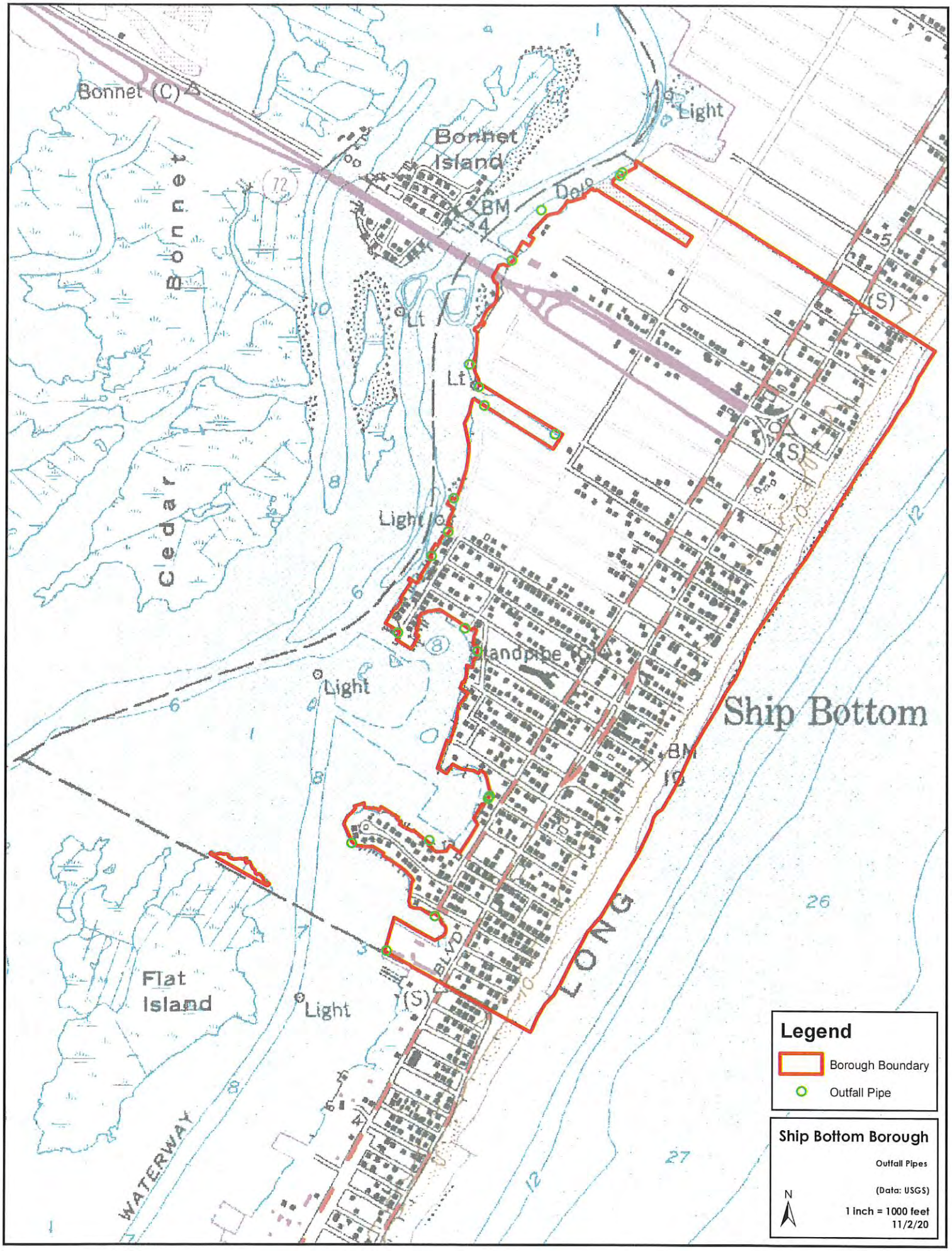
Legend
Borough Boundary
Ship Bottom Borough
Figure 4: Borough Boundary
On 2015 Aerial Photography
(Data: NJGIN)
N
1 inch = 1000 feet
11/2/20


Bonnet (C)
Bonnet Island
Light
Dolp
BM 4
Cedar Bonnet
Lt
Light
Standpipe
Ship Bottom
BM 10
LONG BLVD
Flat Island
WATERWAY
Legend
Borough Boundary
Well Head Protection Areas
Ship Bottom Borough
Figure 5: Well Head Protection Areas
(Data: NJDEP, USGS)
1 inch = 1000 feet
11/2/20
N


Bonnet (C)
Bonnet Island
Light
Bonnet
Cedar
Lt
Lt
Light
MANAHAWKIN BAY
Standpipe
Light
Ship Bottom
BM
LONG
BLVD
ATLANTIC OCEAN
Flat Island
Light
WATERWAY
Legend
Borough Boundary
Ship Bottom Borough
Figure 6: Borough And Its Waterways
(Data: NJDEP)
N
1 inch = 1000 feet
10/27/20


Bonnet (C)
Bonnet Island
Cedar Bonnet
Flat Island
Ship Bottom
Light
Legend
Borough Boundary
Land Use
Barren Land
Forest
Urban
Water
Wetlands
Ship Bottom Borough
Figure 7: Land Use Map
(Data: NJDEP, USGS)
N
1 inch = 1000 feet
11/2/20


Bonnet (C)
Bonnet Island
Light
Bonnet
BM
Lt
Lt
HYDROLOGIC
UNIT ID: 13KA09
MANAHAWKIN/LEH BAY
Cedar
Light
Standpipe
Light
Ship Bottom
BM
HYDROLOGIC
UNIT ID: 13MB02
ATLANTIC COAST
LONG
BLVD
Flat
Island
Light
HYDROLOGIC
UNIT ID: 13KA08
MANAHAWKIN/LEH BAY
WATERWAY
Legend
Borough Boundary
Hydrologic Units
Ship Bottom Borough
Figure 8: HUC14
Watershed Areas
(Data: NJDEP, USGS)
N
1 inch = 1000 feet
11/2/20


Bonnet (C)
Bonnet Island
Light
Dole
BM 4
Cedar Bonnet
Lt
Lt
Light
Standpipe
Light
Ship Bottom
BM 10
LONG BLVD
Flat Island
Light
WATERWAY
Legend
Borough Boundary
Outfall Pipe
Ship Bottom Borough
Outfall Pipes
(Data: USGS)
1 inch = 1000 feet
11/2/20
N